MIT's Oldest and Largest Newspaper

thetech.com

The Tech
Established 1881

Volume 138, Number 26

Thursday, November 1, 2018

WEATHER, p. 2

THU: 57°F | 53°F
Showers

FRI: 65°F | 59°F
Rain

SAT: 65°F | 42°F
Showers

Barnhart, Nelson to reassess internal housing processes

Administrators have started to meet with residence hall leadership

By Patrick Wahl
EXECUTIVE EDITOR

Chancellor Cynthia Barnhart PhD '88 and Vice President and Dean for Student Life Suzy Nelson have initiated a year-long process to assess and possibly amend the move-in and housing lottery systems of living groups across campus.

The process will involve gathering input from stakeholders including the Undergraduate Association, Dormitory Council, house presidents, and heads of house, Matt Bauer, director of communications for the Division of Student Life, wrote in an email to *The Tech*. Barnhart and Nelson began conducting meetings with residence hall presidents Oct. 22, and will attend the DormCon meeting tonight to discuss their findings.

In an email sent to house presidents Oct. 23, Nelson pointed to "negative aspects" of current housing lotteries such as "rejection for some due to house 'rush'" and asked the presidents to consider how the housing selection process can be used to "affirm MIT's values on diversity." She wrote that over the course of the fall, "houses will think creatively about ways to redesign

Housing, Page 2

NYSSA MILLER

Students attend the vigil organized at the steps of the Student Center yesterday in the wake of the mass shooting at the Tree of Life Synagogue in Pittsburgh, Pa.

SFFA v. Harvard admissions trial in progress, set to end by mid-Nov.

Unlike Harvard, MIT does not favor legacy students

By Soomin Chun

Harvard is defending its admissions practices in a trial that alleges it discriminates against Asian-American applicants. The trial started Oct. 15 and is set to end by mid-November, according to *The Crimson*, Harvard's student newspaper.

This four-year-old lawsuit by the anti-affirmative action group Students for Fair Admissions (SFFA) has been working its way up the judicial system, but it has gained traction as previously top-secret admissions data was released to the public this summer.

The admissions documents revealed that out of the many factors such as standardized test scores and extracurriculars that Harvard considers in its admissions, it also has a more subjective "personal ratings" component that judges character traits such as likeability, courage, and kindness.

According to *The New York Times*, admissions data showed that although Asian-Americans generally scored higher than other racial groups on academic measures of excellence, they were consistently marked down for their "personal ratings," such as for attributes like

Harvard, Page 2

KEVIN LY—THE TECH

A student sports a piece of pumpkin as a crown following the annual Pumpkin Drop event, which took place Sunday at the Green Building.

Trimble appointed as new OEL director

Trimble emphasizes experiential learning's real-world applications

By Joanne Yuan

Kate Trimble, the current Associate Dean for the Priscilla King Gray Public Service Center, will become the new Director of the Office of Experiential Learning Dec. 1. Professor Kim Vandiver PhD '75, former director of the OEL, will step down to focus his attention on the Edgerton Center.

The OEL was recently reorganized to consist of five units: D-Lab, UROP, the Edgerton Center, the Global Education program, and the PKG Center, according to previous coverage in *The Tech*.

The hope of the reorganization, Vandiver explained in an interview with *The Tech*, is that "the contributions that those groups can make [as a whole] is greater than the sum of their parts."

Trimble hopes to "really turbocharge experiential learning ... [and] to move some experiential learning opportunities from being a bolt-on activity for students into something that's much closer to the core of what an MIT education is," she said in an interview with *The Tech*.

Experiential learning is "messy, complicated, and oftentimes frustrating because it's not happening in a controlled laboratory environment, but it mirrors the way that people tackle problems after they've gotten out of school and graduated," Trimble said. Yet, because of its real world consequences, experiential learning "complicates learning in a way that accelerates it."

One challenge Trimble expects to face is how decentralized

Trimble, Page 2

IN SHORT

Sophomores and juniors can begin submitting applications (due Nov. 4) to become **Burchard Scholars**, a program for students with strong interests in the humanities, arts, or social sciences.

Election day is Tuesday, Nov. 6. Check your polling place at vote.org/polling-place-locator. For many who live on campus, your polling place is at Kresge Auditorium.

If you are **voting absentee**, check your state's requirements and deadline as soon as possible; if you've already received your absentee ballot, don't forget to mail it back in time.

Spring housing forms are due Nov. 25 and are available at myhousing.mit.edu.

Interested in **joining** *The Tech*? Stop by for dinner Sunday at 6 p.m. or email *join@tech.mit.edu*.

Send news and tips to news@tech.mit.edu.

VOTE YES ON 3

Ballot question 3 could shape the battle for trans rights nationwide. **OPINION, p. 4**

FROM TABLETOP TO VIDEO GAME

Join Edward Pierce in a murder mystery. **ARTS, p. 11**

A SHAKESPEARE PROBLEM PLAY

Waltz into the theater and be transfixed. **ARTS, p. 10**

EASY COME, EASY GO

Freddie Mercury flies to the big screen. **ARTS, p. 9**

REIF'S RESPONSE TO SAUDI ARABIA

President Reif responds to criticisms of MIT's relations with Saudi Arabia.

OPINION, p. 4

SECTIONS

Campus Life 3
Opinion 4
Science 7
Arts 9
Fun Pages 13

WEATHER

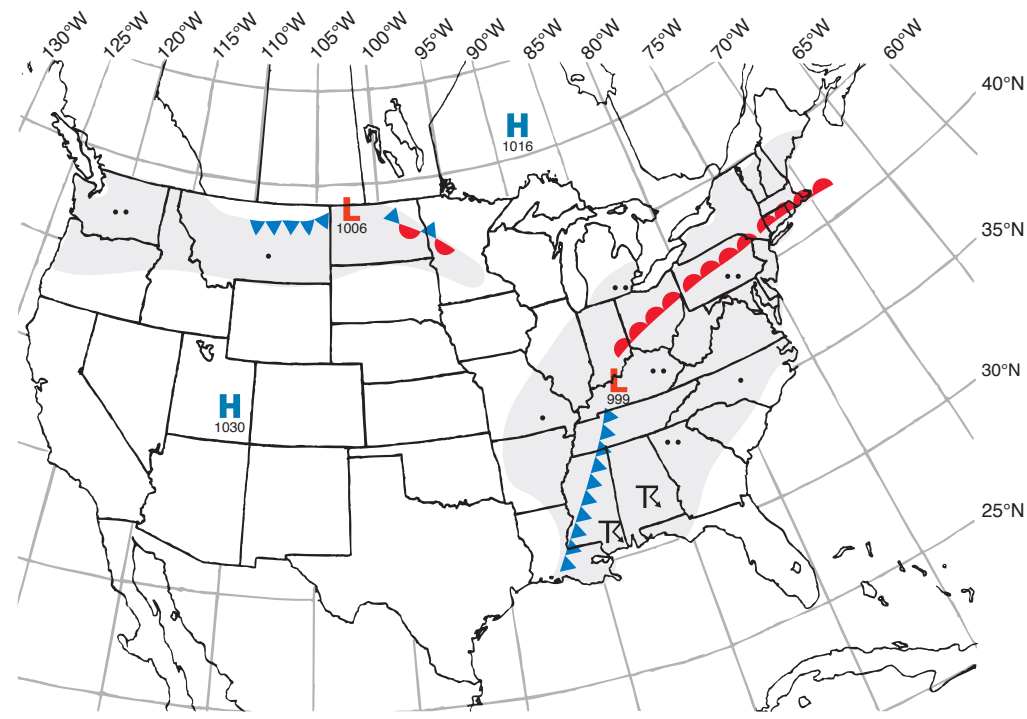
More humidity, clouds, and rain

By Jordan Benjamin
STAFF METEOROLOGIST

After a pause early in the week, clouds and rain are back on the menu. Currently, a low pressure system is quickly surging east after sparking heavy rain and severe weather in the Lower Mississippi River Valley yesterday. The storm system is pushing a warm front northwards through New England today, evicting the recent cool, dry air mass and replacing it with much warmer, more humid air. High temperatures could surge into the mid 60s °F tomorrow and Saturday before the low pressure finally drags its cold front through the region on Sunday, bringing back cool, dry, and sunny weather. During the warmth and humidity, expect several occasionally heavy rounds of rain today through Saturday, and perhaps brisk winds Saturday morning as a weak nor'easter races up the east coast along the cold front. After the front, next week will begin pleasantly under high pressure before unsettled weather again quickly replaces it.

Extended Forecast

Today: Slight chance showers, otherwise mostly cloudy. High around 57 °F (14 °C). Light and variable winds.
Tonight: A chance of showers, otherwise cloudy. Low around 53 °F (12 °C). E winds at 5–10 mph.
Tomorrow: Rain likely. High around 65 °F (18 °C). Low around 59 °F (15 °C). Winds S at 10–15 mph.
Saturday: Showers early. High around 65 °F (18 °C). Low around 42 °F (6 °C).
Sunday: Sunny. High around 53 °F (12 °C).



Situation for Noon Eastern Time, Thursday, November 1, 2018

Weather Systems	Weather Fronts	Precipitation Symbols			Other Symbols
H High Pressure	Trough		Snow	Rain	Fog
L Low Pressure	Warm Front	Showers	✻ ▽	• ▽	Thunderstorm
§ Hurricane	Cold Front	Light	✻	•	Haze
	Stationary Front	Moderate	✻✻	••	
		Heavy	⁂	∴	

Compiled by MIT Meteorology Staff and *The Tech*

NYSSA MILLER

Costumed students skate to music in Johnson Rink at SaveTFP's annual Spooky Skate last Friday.

'We reject rejection,' guidelines say

Housing, from Page 1

their housing lottery," and that the process will continue with a workshop taking place during IAP.

Additionally, Nelson sent a draft of the "guiding principles" to be used in focusing discussions. These included granting agency in the selection process to both first-year students and upper-level students transferring between dorms, as well as the slogan "we reject rejection," referring to the in-house rush periods in which certain living groups, such as those in East Campus and New House, choose who will live in their communities.

A number of students and alumni have spoken out against the redesign, which comes less than a year after Caltech's administration controversiallyended the involvement of upperclassmen in freshman house selection.

"Judgement and rejection are a natural part of social interaction," Tesla Wells '20, president of East Campus, wrote in a public Facebook comment. "I am hopeful that a solution can be devised that mitigates negative aspects of 'hall rush' without compromising communities, sub-optimally placing people, or making the experience Less Enjoyable for freshman [*sic*]."

MIT supports 'narrowly tailored use of race in admissions'

Harvard, from Page 1

"humor" or "grit."

Furthermore, court records revealed that Harvard conducted an internal investigation in 2013 that found there was bias against Asian-American applicants, but it did not take any action on the findings. The SFFA is using these documents as evidence that Harvard uses their "personal ratings" metric to systematically discriminate against Asian-Americans.

Other public documents showed that students on Harvard's "Z-list," applicants who receive admission after a year, were overwhelmingly white and legacy students, according to *The Times*. In general, legacy students were admitted at a rate five times higher than their non-legacy counterparts.

There are some important distinctions between MIT and Harvard's admissions processes. MIT does not practice legacy admissions, does not have a Z-list, and does not favor children of donors, according to Kimberly Allen, deputy director of MIT News, in an email to *The Tech*.

The Department of Justice filed a "statement of interest" in late August in support of the SFFA, alleging that Harvard practiced "unlawful racial discrimination" and had admissions processes "infected with racial bias," *The Crimson* reported.

On the other hand, sixteen top U.S. universities, including all of the Ivy League schools and MIT, filed a joint amicus brief defending race-conscious admissions. "A diverse student body is critical to the educational mission of MIT, and benefits all students," according to a statement from MIT sent to *The Tech* in an email from Allen.

The statement also clarified that through MIT's holistic review process, "an applicant's race or ethnicity is *not* the defining feature of his or her application," and MIT supports a "narrowly tailored use of race in admissions."

"Although Asians are held at a higher standard, I feel that this law case is just coming from the wrong motivation," Yejin Kim, a Harvard student, said in an interview with *The Tech*. "We have to acknowledge that this is not a problem with Harvard, but on college admissions, and further, our society as a whole."

"Discrimination against Asian Americans exists, and it is important for the society to acknowledge that ... winning or losing this lawsuit will not make a difference in the long term. It's more important for America to take this into consideration and attempt to make a difference," Kim continued.

As more admissions data is set to be released during the trial, the public will gain more insight into the black box of selective college admissions. Harvard had a record low 4.6 percent acceptance rate for the class of 2022, according to *The Crimson*. *SFFA* v. *Harvard* will set the course for the future of affirmative action in admissions practices all over the U.S.

Trimble formerly PKG Center Associate Dean

Trimble, from Page 1

experiential learning is at MIT, as it is spread over multiple programs, departments, and clubs; she hopes that the OEL will help students navigate these different offerings.

Mary Markel Murphy, chair of the OEL director search committee, said in an interview with *The Tech* that Trimble stood out during the search — which began in April 2018 — because she presented "the most compelling vision with regard to [building] connective tissue between the five units [of OEL], while at the same time maintaining and celebrating the uniqueness of each unit."

During her time as Associate Dean of the PKG Center, Trimble has helped to create new initiatives focused on climate change, such as the PKG Spring Break program and a partnership with Terrascope.

"I'm really excited about [Trimble] in this role," Vice Chancellor Ian Waitz said in an interview with *The Tech*. Experiential learning programs are "so important for MIT, and I think we have just the right person to move them to another level."

KEVIN LY—THE TECH

Danny Goldfield talks about his ongoing personal project, called NYChildren, Oct. 23. The project involves photographing a child from every part of the world found in New York City.

DID YOUR MIT ESSAYS GET YOU IN?

The Tech is collecting successful application essays (**hint:** yours!).
Email your pieces to cl@tech.mit.edu!

ADVICE

Inner circle and inner peace

Auntie Matter on hard times and friendship

By Auntie Matter

If you have questions for Auntie Matter, please submit them at tinyurl.com/AskAuntieMatter. Questions have been edited for length, clarity, and content.

Dear Auntie Matter,

This semester is shaping up to be a tough one for me. I'm overwhelmed with work, but I can't drop any of my obligations. My (now ex) girlfriend and I broke up about a month ago, and I'm feeling some effects from that. Also, my parents are divorcing. Basically, my life just sucks right now, and while I have great friends who I love to talk to, I don't want to burden them, so I want to know how to handle this by myself, too.

— Seeking Stoicism

Dear Zeno,

I'm sorry you're going through such a hard time. You can certainly improve your situation to some extent (or at least change your perspective on it), but I agree with your assessment that you will just have to deal with some difficulty in the foreseeable future. It seems like lots of bad news is coming unexpectedly, which is hard because you have to deal both with the surprise and the consequences of the surprise. You did not have time to prepare, practically or emotionally.

Auntie's first thought is that insofar as you can take pleasure in being impressive in this situation, you should. As you have just been taught, we do not always have control over the circumstances of our lives, and one of the few pleasures in life that does not depend on external factors is the pride we can take in our own good conduct. Cut yourself slack where you need to, but maintain standards. Having a rough time is never an excuse for treating others poorly — if nothing else, uphold your standards with respect to your treatment of others. Take pride in your behavior. It is genuinely impressive to bear a difficult circumstance with grace.

This is not to say, however, that you should not accept help when appropriate. You mention not wanting to be a burden to your friends. It would be easy to say that you should not worry about burdening your friends, but that isn't true. It's a delicate balance. Try to rely on your friends where they can genuinely help you, when you need a distraction or advice, or when a specific favor would not be difficult for them but would make a great impact for you, but don't make your troubles the entire content of your friendship. Try to take pleasure in your friends like you would at any other time.

Finally, some practical tips. Lower your expectations — you will likely not do as well this semester as you have done in previous semesters, and getting upset about it won't help the situation. Similarly, you should take stock of what is most important and necessary for you to do, and do that first. Be willing to let other things slide. Try to focus on getting through the next day or week as opposed to obsessing over the entire situation — you cannot solve your breakup or your parents' divorce, but you can make a to-do list for tomorrow. Try to keep up with your regular schedule insofar as you can — go to classes even if it doesn't feel useful. Go to your clubs. Go to places where you will see other people: make this a priority. Of course, try to keep a regular schedule of eating, sleeping, and exercise. And finally, don't let the bad things bleed into everything. If you are tempted to say, "I hate everything," remind yourself that it is not true. This sort of statement is not just false but self-fulfilling, and it would not do in such a tough period to lose the things that are good because you began to hate them, too.

Good luck! The good news is, in the future, you will know you can survive a period like this when the next one comes up.

Dear Auntie Matter,

I'm a freshman, and I still don't have any friends. At first, I thought it would be ok because no one has friends coming in, but it has been two months, and now I'm worried everyone else made friends and I missed the boat. Am I really out of luck here? What do I do?

— Friendless Freshman

Dear Freshman,

The short answer is no, you are not out of luck. Auntie believes you can still make friends, though it might require more effort now that the first few months of the semester have elapsed.

Why have you not made friends yet? It could be any number of reasons: for example, you're so overwhelmed with adjusting to a new life and classwork that you haven't made time, you don't quite know how to make friends in a college setting, or you have just been unlucky in your attempts at friendship.

The remedy is the same regardless of the cause: you will have to reach out to people you want to be your friends, and you will have to keep reaching out to them until you actually become friends.

First, how do you find potential friends? You could find them in classes. Simply strike up conversation with the people sitting nearby you, ask them about themselves, see if they want pset buddies. You could find them in clubs. It is never too late to join most clubs on campus; many accept new members all year round. You could talk to people in your dorm.

The key to fostering friendship is to stick around for — and participate in — conversations. If you seek friends you have common interests or goals with (e.g. pset partners, club members, or dormmates), then it helps you to have something to talk about right away.

Second, how do you turn potential friends into actual friends? You keep interacting with them. Your initial common interests will develop into a shared history of interactions, which gives you more and more to talk about.

A few words of caution: don't force friendships. That is, don't be too goal-oriented in your interactions with people; don't insist that you want to be friends and worry so much about making friends that you alienate potential friends with your zealousness. Friendship will develop naturally as you converse and interact with people.

Finally, there is no reason to fear that you will never make friends. Auntie has made new friends every year she has been at MIT, and she did not meet all of them, or even most of them, first semester freshman year.

Do you want to be like Sherlock Holmes?
The Tech is looking for investigative reporters.

Do you like asking tough questions?
Do you enjoy nosing around and collecting evidence?
If so, we want you on our team!

join@tech.mit.edu

2018 Julius Schwartz Lecture
BRIAN MICHAEL BENDIS
BESTSELLING DC COMICS/MARVEL WRITER & ARTIST
5-TIME EISNER AWARD WINNER
THURSDAY, NOVEMBER 8, 5PM
FREE | 32-123 | cmsw.mit.edu/bendis
Comparative Media Studies | Writing
Massachusetts Institute of Technology

OPINION OPINION OPINION

GUEST COLUMN

Massachusetts needs an endowment tax

Elite universities' non-profit statuses allow them to accrue great wealth at the expense of their local communities

By Jay Gonzalez

Members of the MIT Community,

My name is Jay Gonzalez. I'm running for Governor because I believe we face big challenges that require bold thinking and real leadership.

In Massachusetts, too many working families are being left behind, and our political leaders, particularly Governor Baker, are thinking too small and are too wed to the status quo. We have a transportation system that is among the worst in the country and an education system that is underfunded and leaving too many of our young people behind.

That's why I've proposed investing significant new resources in education and transportation, starting with a modest tax on the robust endowments of the wealthiest private colleges and universities in Massachusetts.

As Governor, I'd file legislation to raise an additional $1 billion annually through a 1.6 percent tax on the value of endowments exceeding $1 billion. The tax would impact just nine private institutions whose collective endowment totals more than $65 billion, including MIT..

This is a fair proposal. These non-profits have accumulated enormous wealth in large part because they don't pay taxes. One report estimates that Harvard University, which has a $39 billion endowment, receives about $48,000 per undergraduate student in tax subsidies and other government support. Meanwhile, the state spends just $8,000 per undergraduate student at UMass Boston. We know that a higher percentage of students who graduate from our public institutions choose to remain here in Massachusetts than those who attend the private institutions.

The government subsidies provided to institutions of higher education are regressive — the wealthier the institution, the more it benefits from tax breaks and the more government loses in revenue that could be invested to support broader public objectives.

I understand that this proposal comes at a time when higher education institutions feel under siege. Admissions policies are being challenged, competition for students and faculty is intense and growing internationally, and President Trump and Republicans in Congress are attacking your community rather than supporting it.

I want to be clear: I support and appreciate you and the incredible college you work for and attend. We're fortunate to have MIT in Massachusetts. You help drive our knowledge-based and innovation-oriented economy. You also give financial aid to lower-income students who otherwise couldn't afford their tuition.

But you are part of our broader community. Thanks to your tax-exempt status, MIT and many other colleges and universities have accumulated enormous wealth and are in a position to give back without impacting the important contributions you make.

Critics have argued that taxing MIT's endowment will prevent you from providing scholarships and financial aid to needy students. But it's worth noting that many elite colleges pay more in endowment management fees than they do in scholarships.

And even *after* you've made these valuable contributions, your multi-billion dollar endowments have grown at an average annual rate of 4.8 – 8.4 percent over the last 15 years. A modest tax should allow these institutions to keep doing everything they do today and still grow their endowments at a rate that exceeds inflation.

As important as these colleges and universities are to our economy and the strength of our community, our most important asset is our people. I am running for Governor to make a difference for you and all the working families being left behind. The people of Massachusetts are my top priority.

I know it's controversial. But my endowment tax proposal is fair, and it's the right thing to do. The new tax revenue will result in a better-educated and more mobile workforce, a stronger economy, and a better quality of life for working families being left behind.

Jay Gonzalez is the 2018 Democratic Party nominee for Massachusetts governor.

GUEST COLUMN

The importance of theoretical research

Why the pure sciences are essential to humanity

By Sanath Devalapurkar

I was prompted to write this article by a recent column in *The Tech*. There, the author discusses why he believes that MIT spending one billion dollars to create a College of Computing is a bad idea. I have opinions on the broader message he was trying to convey, but this will not be the topic of this article; instead, I will object to a few sentences used by the author. As a remark, my broader opinions on this subject are shared by a friend of mine, Shreyas Kapur, who has written a response to the cited column which addresses these broader concerns.

My opposition to this column stems from a few very generalized, but still troubling, statements. In particular, the subtitle reads "we should do things not because they are hard, but because they are important." Perhaps it is a little unclear as to what exactly the author means by the word "important"; this is clarified a few paragraphs down, where he says "but as an institution that seeks to better humanity through the sciences, our mission should not be to solve hard problems; it should be to solve pressing problems."

These statements are concerning; they seem to be suggesting that the so-called "pure sciences" are not worth studying, since (by definition) the questions studied have absolutely no applications to solving pressing problems. I'm not sure if that is what the author intended to convey, but I believe that it is still important to argue that the pure sciences are very important to humanity. This is, in part, a defense of my interests. However, more generally, these generalized statements have surely been uttered to almost anyone who works on something theoretical.

Before making any claims, I will have to address what I mean by the "pure sciences." I don't really want to provide a precise definition, so I will let Randall Munroe illustrate what I mean. Certainly, therefore, if I could argue that pure mathematics and theoretical physics are important, then it would be possible to use similar arguments to claim that all of the pure sciences are important.

So why *are* pure mathematics (which I will just refer to as "mathematics" from now on) and theoretical physics important? One could argue that mathematics and theoretical physics are important to work on now because somebody will find some application in the future. Take, for example, Einstein's work (a very cliché example; sorry!) on general relativity. Back when he was working on developing this theory, there was no application for his work. His work, for example, clarified the precession of the perihelion of Mercury: stuff that is utterly useless to society! But today, you need predictions made by general relativity to make corrections to GPS satellite clocks, and nobody would deny that anything having an impact on GPS technology is useless.

> **Studying something like mathematics is essentially understanding the way the human mind thinks.**

While this is a good defense of theoretical research, and one that probably has appeared in numerous grant letters, I don't think this is really why theoretical research is important, or why theoreticians do what they do. I believe that people do theoretical research for a much deeper reason, one that isn't appreciated by a lot of people today because of the numerous problems existing in today's world.

Humans are not unique in creating tools to solve problems: there is a long Wikipedia page cataloguing examples of animals using tools. While tool-use does require some cognitive sophistication, it is certainly not representative of the limit. What, then, differentiates humans from other animals? I don't want to claim that humans are in any way superior to other species, but one possible answer is our ability to approach abstract problems. For example, we can plan out the construction of a skyscraper, say, using pure thought, without having to make multiple attempts and fail numerous times in order to learn the right method.

Using this unique ability to *only* build tools that will be useful to society seems short-sighted. This power to imagine and play with abstract concepts means that we could be thinking about things that have never been studied before in the history of life on Earth. That's a grandiose statement, so let me translate this into a claim that is less pretentious. Mathematics, and more generally any pure science, studies *hard problems simply because they are challenging*, so studying something like mathematics is essentially understanding the way the human mind thinks. Mathematics, for example, is a very "clean" subject.

Unlike subjects like biology, chemistry, and any engineering subject, one does not need to have anything other than a brain and the relevant training in order to understand math. One does not have to worry about their code not compiling because they accidentally used Python 2 instead of Python 3, or that they do not know the coefficient of friction to five significant figures. As long as one is willing to spend time and energy ruminating on concepts and ask for, and provide themselves with, clarity in exposition, anybody can understand mathematics. Any proven statement is indubitably true, and there is no way anyone could contest its truth. Of course, one could still make mistakes in a proof,but a mistake is created not because someone messed up entering values onto a computer, or because they did not account for air resistance; rather, it is because they have an error in their logic. It's horrifying to make a mistake, because when you do, you realize that you have a misunderstanding of something as fundamental as logic, and that you haven't grokked something well enough. And that's the whole purpose of mathematics: to understand things as well as possible and to solve hard problems.

I approach mathematics as a sort of very large and complicatedly intertwined graph. I don't think I've understood something until I can zoom into this graph arbitrarily well and explain every step taken to deduce a final result. When I do have a statement along with a correct proof, it is exhilarating because I know that I have come across a fundamental, irrefutable truth. I wouldn't trade that feeling for anything.

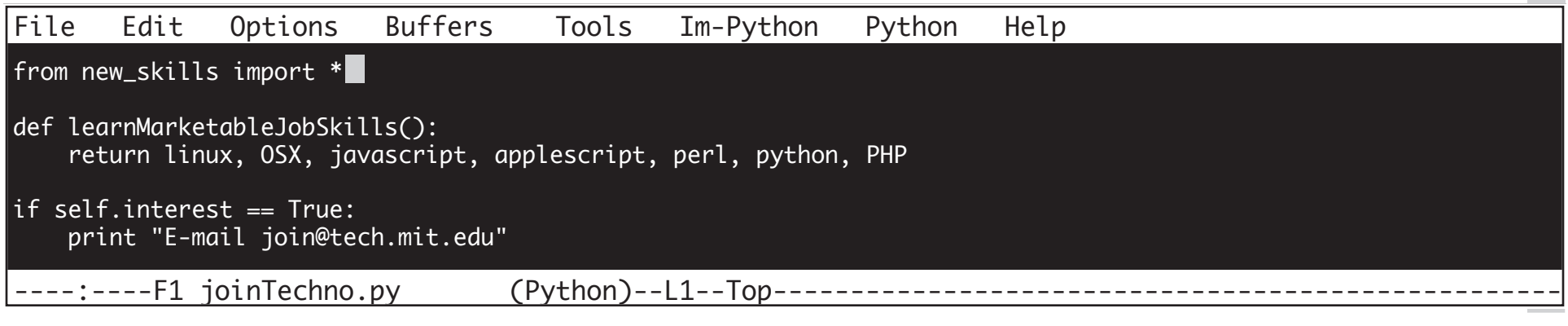
So far, I have only addressed why one should study something like theoretical mathematics. While the reasons mentioned above are also applicable to the other pure sciences, there are other reasons more specialized to fields like theoretical physics. Sure, theoretical physicists might revel in their ability to stretch the barrier of human thought, but the reason they are physicists and not mathematicians is because they love the thrill one gets when thinking about the way the universe works.

Take, for example, things like Bell's theorem and quantum entanglement, which both (*very* roughly) say that quantum mechanics is nonlocal. These theories tell us important facts about the way physics (or, more generally, the world) works at small scales. These sorts of results are rather inconsequential for everyday life, and certainly do not help with humanity's impending climate-change-induced doom — but they are still absolutely *vital* to humanity, by showcasing mankind's unique ability to understanding the "inner workings of the world."

> **It would be very shortsighted to abandon studying the pure sciences or look down upon them in disdain: we would lose a major part of what makes us human.**

I certainly believe that the non-pure sciences are equally important to humanity. Although we obviously need to address issues that plague us today, we should also be very hesitant to claim that the pure sciences are not as fundamental as the applied sciences. It would be very shortsighted to abandon studying such subjects or look down upon them in disdain: we would lose a major part of what makes us human.

Sanath Devalapurkar is a member of the MIT Class of 2020, studying mathematics (Course 18) and physics (Course 8).


File Edit Options Buffers Tools Im-Python Python Help
from new_skills import *
def learnMarketableJobSkills():
return linux, OSX, javascript, applescript, perl, python, PHP
if self.interest == True:
print "E-mail join@tech.mit.edu"
----:----F1 joinTechno.py (Python)--L1--Top----------

GUEST COLUMN

Grad students suffer from lagging support

Campus resources are often geared solely towards undergrads

By Mark Goldman

According to the Registrar's office, in addition to MIT's 4,602 undergraduates, there are 6,972 graduate students this year. Though we graduate students make up a sizable population of MIT's student body, we often feel forgotten when searching for support. The relative lack of graduate student support resources at MIT is partially historical: the graduate student population has grown by 175% in the past 50 years, whereas the undergraduate student population has only increased by 24% in that same timeframe.

Given that undergraduates are younger, it makes sense that a higher percentage of undergrads would need these support services. At the same time, I have seen many graduate students suffer silently from conditions which were either developed or exacerbated in graduate school, and when they reached out for help, the help offered did not meet their needs. Despite the need for graduate support, the notion that graduate students would not benefit from these types of services is still pervasive at MIT.

Memories about the times when MIT ignored me and other graduate students are forever etched into my memory. Four years ago, after a string of undergraduate, graduate, and faculty deaths when the whole campus was feeling down, I received an email urging professors to be understanding and accommodating of student needs. In not one of my all-graduate classes did the professor mention the email or possibilities of extensions.

The subconscious idea that graduate students would not benefit from additional support resources seems to underpin the naming and training of student offices. Walk into Student Support Services as a graduate student, they will probably help you, but you might feel weirded out because the office is designed to support undergrads. Then you check out how Office of Minority Education can help you feel more included just to find out it is also for undergraduates. Maybe your first year at MIT was tough, so you register for the class "Designing the First Year Experience" to help make life better for new grad students. You might be surprised that MIT appropriated the term "First Year" to refer to undergraduate freshmen, valuing political correctness and brevity over ambiguities with graduate students. But don't worry too much: you can always look out for a Grad Friendly logo to help you identify which events won't make you queasy, though I am surprised when I notice even one poster with this logo as I cross the infinite.

> **Graduate students at MIT often feel more like replaceable cogs in MIT's research machine than humans that MIT cares about investing in.**

In times of desperation, you'll most likely be directed to the Office of Graduate Education for support, which lacks the convenient drop-in hours of the undergrad-Student Support Services. You may also be directed to MIT Mental Health and Counseling, which has turned away a few of my graduate student friends who were asking for services that are meant to be provided to all students.

MIT is well-aware that graduate students are unsure of where to get help, and I think tangible improvement have been made in the four years I've been here. MIT renamed the Office of the Dean of Graduate Education (ODGE), which I often confused for Office of Diversity in Graduate Education, to the shorter Office of Graduate Education (OGE) and gave it a more central location. It also created the Graduate Assistance and Information Network (GAIN) to help graduate students more easily navigate the entangled web of support services.

MIT has also tried different approaches to reach graduate students, with varied success and a lack of transparency. MIT created a conflict management office with the goal of helping graduate students deal better with conflict between labmates, advisors, and in life in general. The office provided excellent trainings and support for graduate students. I enthusiastically joined this program and it has been immensely helpful for me. However, despite the success, the full-time staff coordinator changed positions, the website became outdated, and I am left wondering why this excellent resource was maimed.

In order for MIT to significantly improve the level of graduate support, it will need to collect and analyze relevant data. When data is not available, MIT makes non-optimal solutions. One recent example came from the Grad Housing Preferences Survey which indicated that people did not value large bedrooms and gyms. If this had been known before SidPac was designed, it might not have been designed with almost entirely large bedrooms and large exercise rooms. Data could be collected for a much wider range of decisions. For example, restructuring student support could be much more effective if the administration knew where students would go to seek support, which might require a survey asking students (graduates and undergraduates) "Which of the following support services do you think would best help you if you wanted to discuss leaving MIT?" If a lot of false positives come up, then the administration can figure a way to fix it.

MIT should be experimenting with new strategies to support graduate students and trying to better integrate the successful ones into graduate life. Pilots within graduate dorms could inform how support resources can be better integrated into new dorm structures, which could passively provide support for hundreds of students without large recurring costs. Programs successful at department levels could be expanded to provide best practices across the institute.

The administration should set a target for how much student support graduate students should have relative to undergrads, and then crunch numbers to see how much is spent on graduate student support (academic, professional and personal) and undergraduate student support (splitting mixed programs like GECD and MH&C based on fraction of attendance), to determine how far we are from ideal, and use this information to ensure MIT is effectively supporting graduate students.

Throughout the student support process, transparency would provide multiple benefits. Wider community participation, which enables transparency, can lead to more optimally designed programs. Showing both promising and disappointing results indicates to graduate students that MIT is taking student support seriously, leading students to more likely feel valued by the Institute. Transparency can also help administration uncover oversights which might never be looked at without needing to undergo the process of making data public. Releasing public department level statistics, like retention rates and average time to receive a Ph.D., might motivate departments to improve their programs and remove barriers to for graduate students success.

The issue of graduate student support carries itself way beyond MIT's borders. While talking with a friend from college who is applying to Masters programs involving technology and policy, I asked if she had considered MIT's Technology and Policy Program. She responded that she had looked into the program but decided against it primarily because she couldn't see herself as happy at MIT. Though I was sad she wouldn't be living nearby, I totally understood her perspective. Graduate students at MIT often feel more like replaceable cogs in MIT's research machine than humans that MIT cares about investing in.

Mark Goldman is a graduate student in the MIT Department of Chemical Engineering.

LAB SPOTLIGHT

Optimizing the human brain

Dr. Deblina Sarkar's breakthrough project on neurological biosensors

By Quinn Brodsky

When she began studying nanoelectronics, Deblina Sarkar never thought she would one day apply her work to the human brain. A project on ultrasensitive biosensors led her to a position in MIT's Synthetic Neurobiology Group, where she found that she was able to integrate her experience in nanoengineering with her passion for neuroscience. After a prolific residence in the lab, which included developing a super-resolution microscope to look at nanoscale resolution of building blocks of brain, Sarkar is seeking out a new challenge. She wants to create the most efficient computational device. She is starting the Nano-Cybernetic Biotrek research group to do so, but there is no better computer than the human brain. "The brain is the lowest-power computer ever," Sarkar says.

Sarkar's goal is to further neurobiological therapies in a minimally invasive way so that one can maximize treatment of the disease while minimizing side effects.

Sarkar and other neuroscientists hope to understand one of the many mysteries of the human brain: how a healthy brain differs from one with a neurological disease like Alzheimer's, Parkinson's, or Huntington's. All of these neurodegenerative diseases affect the brain's structure and function. To further characterize the differences between healthy and diseased brains, Sarkar's new group will use new physics and materials to develop nanoelectronics for computing applications. These nanoelectronics will be adapted for biological use to create devices that Sarkar says "can be used to sense our biological information, and also to do some internal computation to detect if there's something wrong in our bodies and either store that data internally or wirelessly transmit it outside the body."

Sarkar's goal is an ambitious one. Current innovations in bioelectronic interfaces only go to millimeter and centimeter scales, especially in an organ as sensitive as the brain. "What I want to build are extremely small and low-power devices which can give single-cell resolution and will be minimally invasive," Sarkar says. She notes that if there is an issue with one cell, the avalanche effect due to the dependency of the human body on the interactions between its parts may cause greater issues. "Maybe a single cell in the circuit is affected, and that affects the functionality of the entire brain."

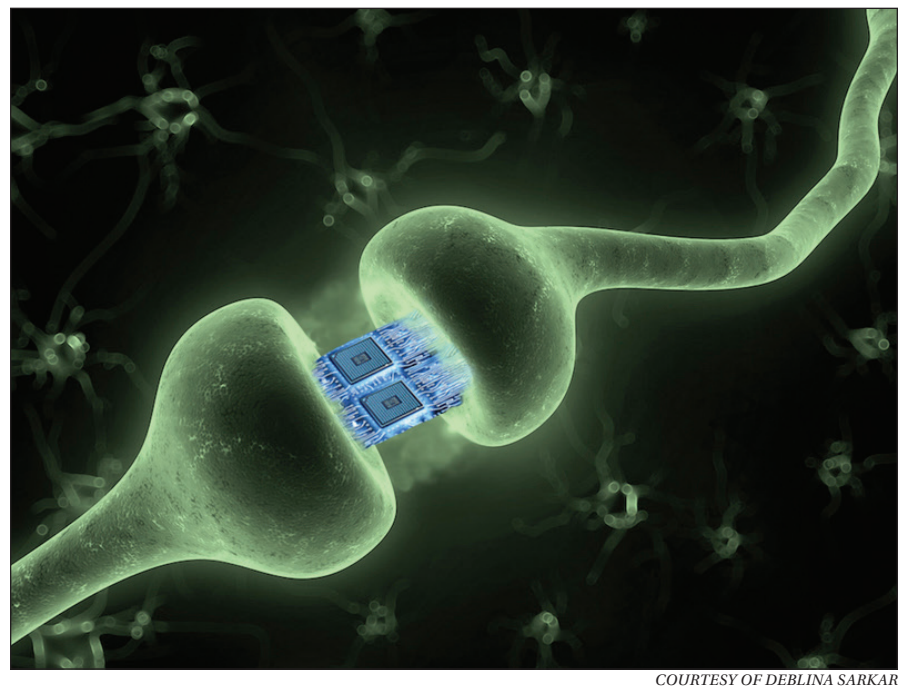
Sarkar's goal is to further neurobiological therapies in a minimally invasive way so that one can maximize treatment of the disease while minimizing side effects. Her approach — using nanoelectronics to treat neurological diseases — happens on the scale of cells, but why treat cells when it is much easier to treat tissues and organs?

The size of the nanoelectronics has posed a major obstacle for her research, since the physics of the nanodevices does not scale properly below certain lengths. For instance, below a scale of about five nanometers, voltage adjustment no longer controls electron movement. "You can think of it as a tap," she explains. "The water is flowing, and you control the flow of water with a knob. If you make the knob too small, the control of the flow of electrons is affected. Basically, it will begin to leak, and you cannot turn it off." This can have disastrous effects in the brain, whose operation relies upon carefully maintained voltages.

Voltage control is not the only issue Sarkar must navigate. Typically, bioelectronics comprise many small components, but the size adds up and results in an invasive device. Sarkar's approach is to make the components smaller — around a few nanometers — so that the overall device is smaller — on the order of a few microns. She plans to incorporate methods such as using three-atom thick layers on her devices.

There are two primary dangers to implementing bioelectronics into the brain. Displacing biological tissue can disrupt the normal function of the brain. Sarkar notes that the size of the device must be less than 0.1 percent of the volume of a cell if it is to be considered truly non-invasive. Another potential danger is that the immune cells in the brain will recognize the device as foreign and attack it. However, if it is coated in a biological material that the immune cells see as their own, the device can be camouflaged. Another aspect Sarkar must consider is the power output of the device. "They must be low power so that the brain temperature doesn't change too much. Power dissipation [within the brain] must be controlled so that the temperature does not increase by more than two degrees Celsius."

How will she design these devices to work in the brain without disrupting its natural function? The answer lies in the organ itself.



COURTESY OF DEBLINA SARKAR

Deblina Sarkar hopes to create nanoelectronics that can interface with the human brain and optimize its function.

The brain serves as a model for computation because in traditional computers, while the error rate is very low, there is little space for automatic correction of the errors when they do happen. In the human body, the error rate is higher but it has its own correcting algorithms to account for defects. This works because there is redundancy in neuron function, and, as Sarkar explains, "That way the probability of committing an error is reduced, though a single neuron may commit more errors than a digital computational unit." Moreover, components in computers can connect to a few other components, but in the brain, "One neuron connects to ten thousand other neurons [and then] to synapses, so the connectivity is really huge," Sarkar says. "In brains, as a function of what kind of activity is going in the brain, the connections between the neurons can change." This principle can be described simply by the phrase "use it or lose it": if the brain does not use a pathway often, it will do away with those pathways altogether. Furthermore, neurons that fire together, wire together: the brain strengthens pathways that are used often. These communications between neurons can happen at any time and aren't limited by switching as they are in computers.

But why change our biology at all? "It is very human to want to improve," Sarkar says. She hopes that if humans make these changes, their neural function will improve, meaning humans could think faster and learn new skills quicker. In turn, humans would spend less time learning and performing basic tasks and could spend more time doing what they love, whether or not that be improving their own biology.

She hopes that if humans make these changes, their neural function will improve, meaning humans could think faster and learn new skills quicker.

Sarkar's career, both in its trajectory and in its day-to-day practice, requires a lot of flexibility. Sarkar has a message for students who, like her, may encounter a field that suddenly changes their career. "There is a saying in India that someone who can cook can also meditate." In this, she explains that what matters in anything, whether it be science or sports or art, what matters are not the skills but rather the mindset — someone who shows promise and excitement in one field should see no obstacle in extending their passions to something unknown to them. "I would encourage students to go outside their comfort zone."

SCIENCE SCIENCE SCIENCE

Molecular Puzzles of Life

November 16-17, 2018

E14-6th floor; Massachussetts Institure of Technology, United States

For the first time, a Molecular Frontiers Symposium will take place in the US, hosted by our coworkers at MIT. 10 iPad mini will be given out for winners of 2018 Molecular Frontiers Inquiry Prize

Molecular Frontiers Symposia bring together leading scientists who present their perspectives and most recent discoveries with molecules as the common theme. Open to the public and especially welcoming high school students, these annual events bring the frontiers of molecular science to general discussion on current topics.

Started in 2006, Molecular Frontiers operates as a non-profit organization, hosted by the Royal Swedish Academy of Sciences. Its Scientific Advisory Board, a group of eminent scientists including many Nobel Prize laureates, represent expertise from a wide range of molecular science disciplines.

Register here:
https://ui.ungpd.com/Surveys/b2c4eeee-fc1a-406f-a317-233f6c8736c0
For more information, visit
http://molecularfrontiers.org/symposia/mit-2018

MOLECULAR FRONTIERS

OFFICE SPACE FOR LEASE IN CAMBRIDGE

500 sf at 545 Concord Ave
904 sf at 545 Concord Ave
1,234 sf at 810 Memorial Dr
1,310 sf at 545 Concord Ave
2,550 at 186 Alewife Brook
655 sf at 545 Concord Ave
1,094 sf at 810 Memorial Dr
1,250 sf at 552 Mass Ave
2,400 sf at 614 Mass Ave
14,600+ sf at 810 Memorial Drive

For more info, please go to www.ValtiCommercial.com
Click on the address, SPACES tab, and Photos link

Patrick Verbeke | Broker | KW Commercial Cambridge
Tel: 617-230-3638 Email: Patrick@ValtiRealEstate.com

Be a PENguin
write for us
e-mail join@tech.mit.edu

WE'RE SEEKING TO BUILD OUR FORCES
JOIN@TECH.MIT.EDU

Solution to On the set

from page 13

V	E	A	L	■	A	P	P	T	■	A	B	B	E	Y
A	B	L	E	■	P	R	E	Y	■	B	R	A	V	E
L	O	I	N	■	P	E	E	P	■	O	A	S	E	S
I	N	C	O	M	E	P	R	O	D	U	C	E	R	■
D	Y	E	■	I	N	S	■	■	I	T	E	M	■	■
■	■	■	E	N	D	■	W	O	N	■	R	E	S	T
S	U	R	G	E	■	A	I	M	E	D	■	N	C	O
P	R	O	G	R	A	M	D	I	R	E	C	T	O	R
A	G	T	■	S	L	E	E	T	■	N	A	S	T	Y
M	E	A	N	■	I	N	N	■	S	I	T	■	■	■
■	■	T	E	S	T	■	■	S	U	E	■	S	A	T
■	S	I	X	P	O	I	N	T	E	D	S	T	A	R
S	O	O	T	Y	■	R	O	A	D	■	P	O	R	E
R	U	N	T	O	■	A	N	T	E	■	I	R	O	N
A	R	S	O	N	■	N	E	S	S	■	T	E	N	D

Solution to Rise

from page 13

8	7	2	4	5	1	3	9	6
5	6	4	8	3	9	1	2	7
9	3	1	7	6	2	8	4	5
6	2	9	1	4	3	5	7	8
1	4	8	2	7	5	9	6	3
7	5	3	9	8	6	2	1	4
3	9	5	6	2	7	4	8	1
2	8	7	5	1	4	6	3	9
4	1	6	3	9	8	7	5	2

Solution to Late night

from page 13

1	3	5	4	6	2
6	2	4	3	5	1
5	1	3	2	4	6
4	6	2	1	3	5
3	5	1	6	2	4
2	4	6	5	1	3

LIFT YOUR GLASS
AND BE THANKFUL

Make The Holiday Season Extraordinary

PERSONAL LOANS

An MIT Federal Credit Union Personal Loan Can Help With:

- Payment options: via check or automatic withdrawal
- Various terms: borrow between $500 and $25,000
- No processing fees, service fees, or pre-payment penalty

Apply today at **mitfcu.org/*HolidayLift***

MIT FEDERAL CREDIT UNION

Insured by NCUA

MOVIE REVIEW

The complex Freddie Mercury takes the stage

Bohemian Rhapsody is a sweeping, judgmental presentation of Mercury's family, sexuality, relationships, and artistry

By Ivy Li
ARTS EDITOR

ALEX BAILEY /TWENTIETH CENTURY FOX FILM CORPORATION

Gwilym Lee (Brian May), Ben Hardy (Roger Taylor), Rami Malek (Freddie Mercury), and Joe Mazzello (John Deacon) star in the recreated Live Aid concert in the film *Bohemian Rhapsody*.

Bohemian Rhapsody is marketed as a Freddie Mercury biopic, but it also promises to show Queen's rise to fame, Mercury's family life, and his sexuality coupled with the AIDS epidemic. It is for these reasons that the trailer is so brilliant, where dramatic snippets against foot-stomping Queen songs promise everything you could ever hope for. The film ends with Malek embodying Mercury's vivaciousness in a recreated Live Aid concert, one of the most impressive Queen performances in music history (rewatching the original on YouTube after the film shows how painstaking it was to recreate it). The acting is fantastic and the cinematography is beautiful, but the film stuffs so much into its 135 minutes that we're not quite sure what to walk away with.

The film feels like a flimsy tower of details, tied together by Mercury's legacy, and made by those who love him. It is *too* multifaceted. The creators' evident admiration of Freddie Mercury causes them to portray every facet of his persona when interacting with the media, his audience, his producers, his lovers, his family, his bandmates, and himself. This is a film made by and for Queen fans created with so much love for Freddie Mercury that it disguises the film's less than stellar foundation. It took a few weeks since I saw the film for me to figure out why I wasn't impressed—why I walked out feeling that the music was brilliant but wondering where everything else went wrong.

★★★☆☆

Bohemian Rhapsody

Written by Anthony McCarten

Directed by Bryan Singer

Starring Rami Malek, Gwilym Lee, Ben Hardy, Joseph Mazzello, and Lucy Boynton

Rated PG-13, Now Playing

I argue that *Bohemian Rhapsody* is decent, not a great or even a good film, but I'd still recommend a go at it. Do I dare rate it three stars? It might turn you away from a film with really spectacular acting. Rami Malek plays a stunning Freddie Mercury against Gwilym Lee's Brian May, Ben Hardy's Roger Taylor, and Joseph Mazzello's John Deacon. The film wants to be a recreated, romanticized history of Freddie Mercury and Queen, of one man's complicated relationship to himself, who he thinks he is, and who he wants to be, but doesn't quite get there.

We move from Mercury's biological family to his self-made Queen family to his performance persona to his intimate relationships to his contraction of AIDS and finally to the Live Aid concert. That's a lot to pack in, and without enough time spent on each, it's not enough to distract from its clichéd script. Still, if you've ever wanted to escape your family, you'll relate to how Parsi immigrant Farrokh Bulsara feels about not fitting his family's vision and flying onto the stage as Freddie Mercury. If you've made and lost friends, you'll understand the Queen band members who insist they're family regardless of the troubles that divide them. If you've ever felt marginalized, you will understand Mercury's initial reluctance to embrace his homosexuality. If you're an artist, then you'll understand Mercury's flamboyance on stage, his fashion, and his unwavering aesthetic vision. And if you are a Queen fan, you will inevitably find enjoyment in anything so saturated with Queen music and leave the theater relistening to their Greatest Hits album anyways.

Let's be clear: the film is a dramatization, not a documentary, like how *The Imitation Game* dramatizes a LGBT icon but with historical inaccuracies to suit the story's message. For example, Mercury was diagnosed with AIDS in 1987, two years after the Live Aid concert, but in the film, this is moved to before the Live Aid concert to create artificial tension before Live Aid. The more troubling result is that this change suggests that AIDS is a direct consequence from Mercury's clubbing life, which is treated with such derision in the film that it feels like a critical look at a major aspect of gay culture.

When Mercury isn't on stage, Malek imbues his character with a welcome gentleness. Mary Austin (Lucy Boynton), Freddie Mercury's first love, ex-fiancee, and subject of the song "Love of My Life" comments on how different Mercury is and how she loves the way he moves. In a touching interaction, Mercury quietly says he's bisexual when Mary tells him he's gay. Mercury stares at her in mingled surprise and relief. The two remain close friends in real life, but in the second half of the film, Austin is used as a plot device to pull Mercury back to his senses (returning to the band and no longer spending his days in frivolous clubbing and drunken parties), just as Hutton is used as his moral compass. Their deep friendships and relationships with Mercury go unexplored and his exploration of his identity is glossed over.

What about the music? The film begins with Freddie Bulsara joining Brian May and Roger Taylor's band, Smile, after their lead singer quits. Propelling their band into stardom, the band, newly dubbed Queen by Freddie who also changes his last name to Mercury, is brought to life through impeccable lip-syncing and the charismatic physicality of Malek's performances. The titular song, "Bohemian Rhapsody," is first presented as a defiant escape from everything, an artistic blending of opera into pop and rock that was expected to be a radio flop, but by the end, it becomes a soliloquy from a man who has resigned himself to his AIDS death sentence (Mercury croons, "I'm just a poor boy, I need no sympathy").

So when "Bohemian Rhapsody" asks, "Is this the real life? Is this just fantasy?" we can see this film as a cross between both, as most films are estranged from their truth as they become fantasy. If this film wasn't a derisive script hidden behind flamboyant blazers and mild amusements, we wouldn't have to leave it all behind and face the truth: this cannot be the definitive Freddie Mercury biopic.

CONCERT REVIEW

Three powerful artists collectively RISE above expectations

The Isabella Stewart Gardner Museum showcases local artists

By Hanna Kherzai

If you've never seen the Isabella Stewart Gardner Museum's Calderwood Hall, picture the Colosseum, compact, with red plush seats, hardwood floors, and glass banisters. In the middle, instead of warring gladiators, sits a concert grand piano and a band (The AB's) awaiting the performers of the night. This is the arena for the RISE Music Concert Series, now in its 4th season. My last time at RISE, I sat at performance level, but this time I sat what felt like directly atop the musical artists. At this vantage point, I was able to map the artists' presence, how they moved and claimed the space, from above. I looked at the audience, and I was captured by their collective head bop in response to the music unfolding before them.

COURTESY OF THE ISABELLA STEWART GARDNER MUSEUM

Artist Oompa rapping at the Isabella Stewart Gardner Museum RISE concert.

The RISE series is meant to support local artists. Last Thursday's performance was "designed to celebrate the elevation and talent of women in music." We were treated to a night of compelling performance by three women of color, each with independent musical styles, together yielding a depth that paralleled the works of art found in the museum around us.

First out was Oompa, Roxbury native and nominee in five categories of the 2018 Boston Music Awards. The 2017 Women of the World Poetry Slam champion came out flowing seamlessly from spoken rap to singing and back again. She used her flow to express a message for black and brown women, for queer and trans people, for marginalized persons, sometimes barely rising to take a breath, about what they deserve. She drew upon "Black Church Energy" and used gospel because of the way it captures gratitude. She made the audience hear what she was saying and react.

Next up was Mattapan's Dutch Rebelle, who built an intense rapport with everyone watching her. She made a point to look up at all 3 floors above her. The beat bounced and the colorful audience all caught on by the end of the song, with several standing to dance along. She owned the stage, even in how she adjusted her thigh-high boots.

RISE

With Oompa, Dutch Rebelle, and Res

Isabella Stewart Gardner Museum

Oct. 25

In that museum, she closed by reminding us that "we are all living pieces of art right now."

Last to perform was Res, a Philadelphia artist with indie, soul, rock, and hip-hop influences. She had a big voice, that somehow still held coffeeshop notes. One of the first things I noticed was her voice control: large beautiful notes and how soft they came down, and the quiet-after that remained in their wake. Her voice had nostalgic tones of the early 2000's, right around when she started her vocal career. My favorite thing was looking to the audience during the opening chords of a song as they formed slow smiles and began to sway or just stared wide-eyed at the music.

The next RISE concert is Nov. 23 with Bilal, and the museum hosts live music and art events every third Thursday.

ARTS ARTS ARTS

ARTS ARTS ARTS

ARTS ARTS ARTS

VIDEO GAME REVIEW

Espionage, cults, explosions, oh my!

Witty banter highlights spy water cooler talk in *The Low Road*

★★★★☆

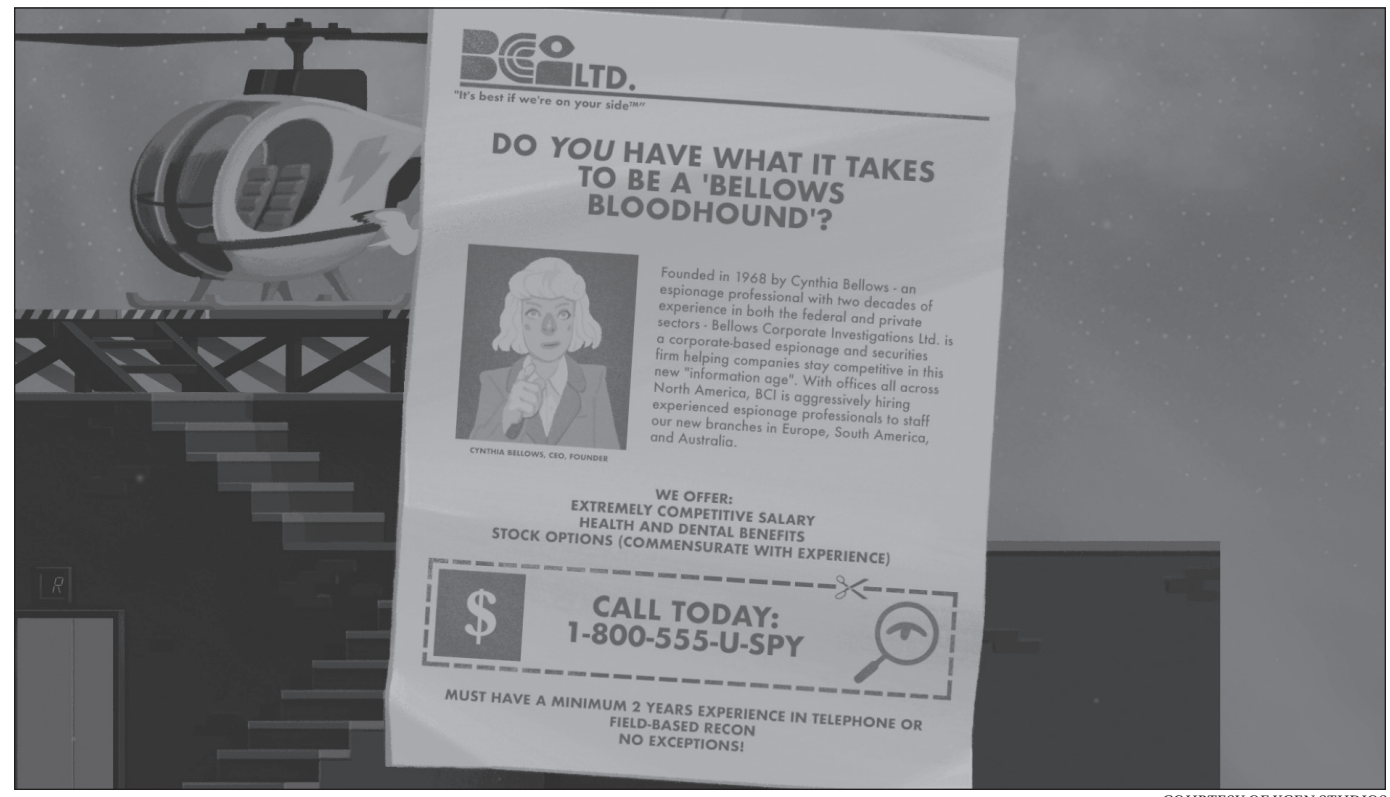
The Low Road

Developed by XGen Studios

Published by XGen Studios

Rated E for Everyone

Available on MacOS, Nintendo Switch, and Windows


BCI LTD.
"It's best if we're on your side™"
DO YOU HAVE WHAT IT TAKES TO BE A 'BELLOWS BLOODHOUND'?
Founded in 1968 by Cynthia Bellows - an espionage professional with two decades of experience in both the federal and private sectors - Bellows Corporate Investigations Ltd. is a corporate-based espionage and securities firm helping companies stay competitive in this new "information age". With offices all across North America, BCI is aggressively hiring experienced espionage professionals to staff our new branches in Europe, South America, and Australia.
CYNTHIA BELLOWS, CEO, FOUNDER
WE OFFER:
EXTREMELY COMPETITIVE SALARY
HEALTH AND DENTAL BENEFITS
STOCK OPTIONS (COMMENSURATE WITH EXPERIENCE)
$
CALL TODAY:
1-800-555-U-SPY
MUST HAVE A MINIMUM 2 YEARS EXPERIENCE IN TELEPHONE OR FIELD-BASED RECON
NO EXCEPTIONS!

COURTESY OF XGEN STUDIOS

Noomi examines a recruitment flyer for Bellows Corporate Investigations Ltd.

By Nathan Liang
ASSOCIATE ARTS EDITOR

Noomi Kovacs has just graduated top of her class at LeCarre Institute for Exceptional Spies (L.I.E.S.). Now she's newly employed at Penderbrook Motors' Division of Outside Intelligence, but she's barred from the exciting life of a field work spy by her risk-averse boss, Barney "Turn" Turner. Deciding to put her spy training to use, Noomi quickly finds a way to get herself out into the field.

Set in the world of the 1970s automobile industry and taking influences from 1970s television, *The Low Road* has an undeniable charm to it, from the groovy, head-bobbing soundtrack (courtesy of Eric Cheng) to the character design. The witty dialogue between characters also works well in setting a good first impression, leading players to quickly understand the nuanced personalities of every character introduced throughout the game. The amazing voice talents also contribute to bringing every character another depth of realism and believability. Emily Bachynski is the go-getter Noomi. Leif Oleson-Cormack expertly plays both the nasal-voiced, stuck up Thornton Penderbrook and the charming, cowboy spy Horace Hayes.

In terms of game mechanics, the game is fairly simple. It takes from the usual conventions of point-and-click adventure games. The player clicks where they want the character to go. They click to interact with objects of interest or to pick up new inventory items. They can also drag items from their inventory into the environment in order to use them on the environment. However, the main drawback from using the point-and-click convention is that the player can sometimes find themselves at a loss of what to do.

Say you click all over the place and interact with everything in sight, but you've combed the same three rooms countless times with no new leads. The point-and-click system sometimes has no real way in leading you down the path of plot continuation. It's only when you remember to try the one thing you may have forgotten to do five minutes ago will the game then prompt you with a piece of revealing dialogue.

In contrast, the game does do a good job in passive narration to give you closer insights to the overall story. For example, once Noomi breaks into Rev Inc's base, the player experiences a long sequence of her crawling through the company's air ducts. In the midst of this infiltration, the missing Sebastian Cartwright's voice can be heard over the company PA system, which reveals a number of things about Rev Inc's company atmosphere prior to Noomi actually entering it.

Another thing to note are the first-person minigames. The integration is a clever concept. Players get to experience what it's like to disable a security system or decode a door lock by seeing it from a first-person perspective. However, the minigames at some point become more cumbersome or even frustrating than fun. There are some that are relatively easy to solve and then others where the actual solution isn't entirely clear. In hindsight, the latter might be appreciated for its cleverness, but there's no satisfaction in getting a puzzle right through random, haphazardous guessing.

Overall, despite its gameplay pitfalls, *The Low Road* is a game with beautiful style and endearing characters. Even when you lose, the game does a good job in leading players down acceptable False Endings, before, like an old-school VHS tape, rewinding back to the losing point. A chill four-hour play, I would recommend this game to any lover of the classic spy genre or to any gamer looking for a short, enjoyable game.

Have something to say?

Write opinion for *The Tech!*

opinion@tech.mit.edu

Rise and shine

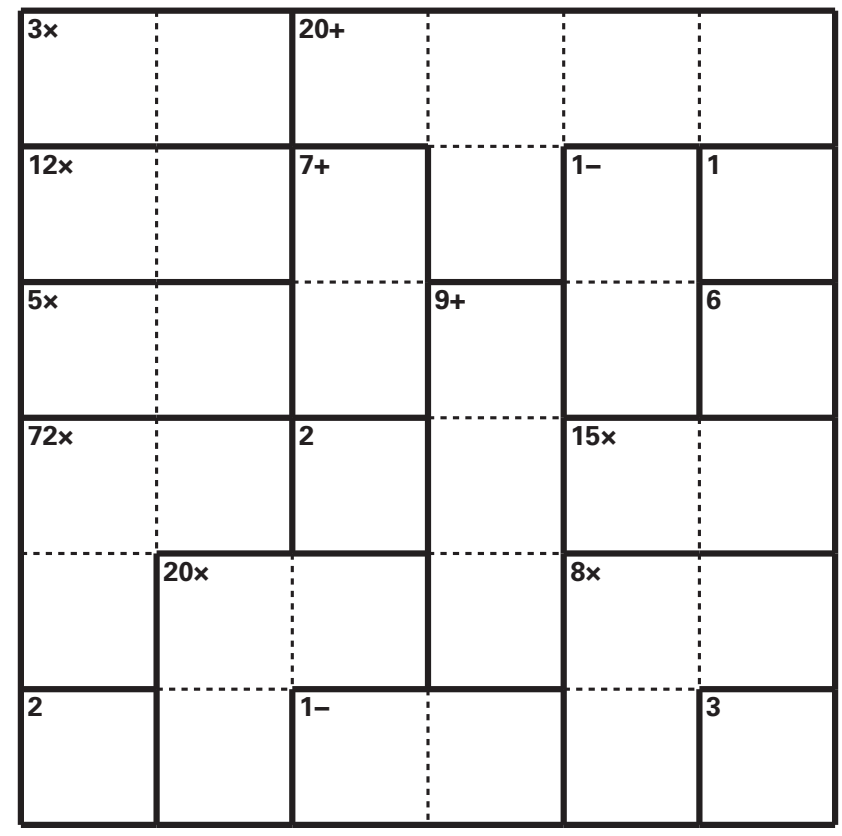
Solution, page 8

	7			5				6
5		4		3				
	3				2		4	5
		9	1		3	5		8
7		3	9		6	2		
3	9		6				8	
				1		6		9
4				9			5	

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Late night grind

Solution, page 8



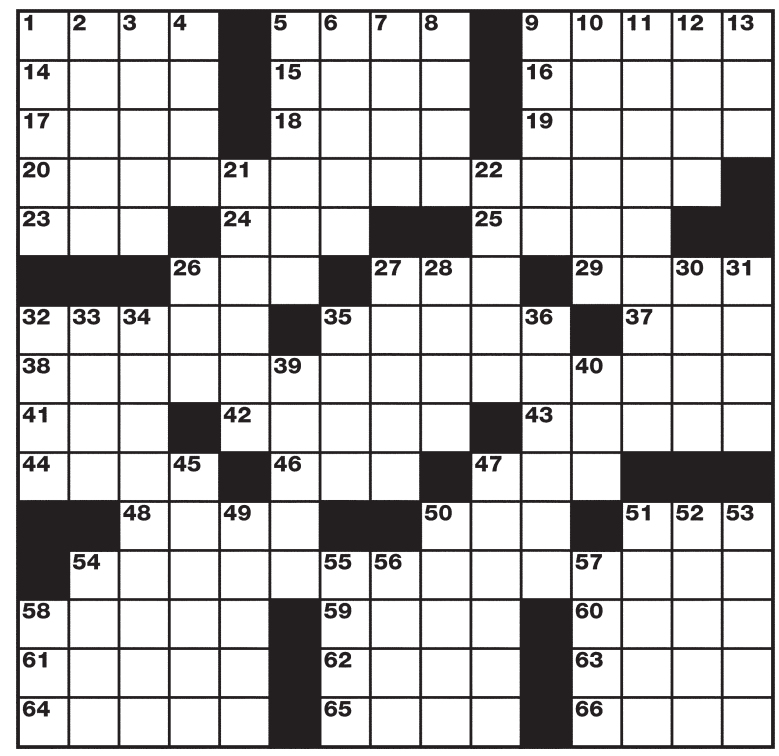
Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.

On the set by Fred Piscop

Solution, page 8

ACROSS
1 Cutlet meat
5 Date with an MD
9 Monks' home
14 Having the means
15 Mice, to owls
16 Courageous
17 Pork cut
18 Baby bird's sound
19 Desert spots with springs
20 Breadwinner
23 Coloring in frosting
24 Shoo-__ (sure winners)
25 News story
26 Conclusion
27 Took the gold medal
29 Take five
32 Sudden increase
35 Intended (to)
37 Sgt. or cpl.
38 Radio station executive
41 FBI operative
42 Wintry precipitation
43 Spiteful
44 Spiteful
46 Rustic hotel
47 Take a chair
48 Try out
50 Take to court
51 Exam for HS seniors
54 El Al logo
58 Needing a chimney sweep
59 Thoroughfare
60 Sponge opening
61 Reach a cost of
62 Initial poker stake
63 Barbell metal
64 Fiery crime
65 Loch of fame
66 Be apt (to)

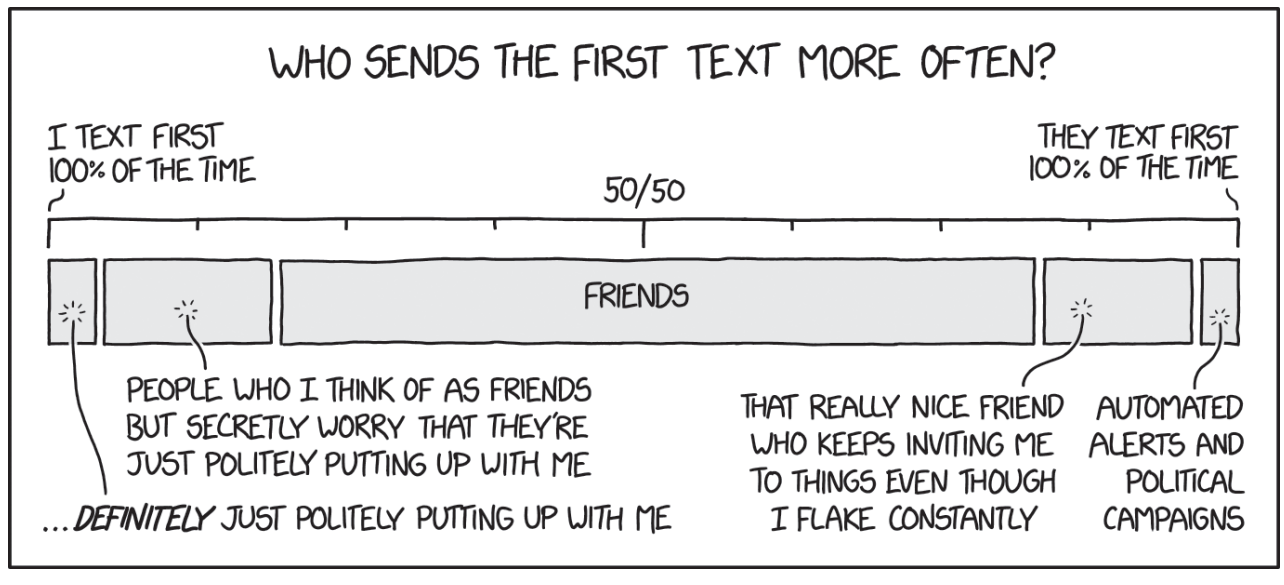
DOWN
1 Logically sound
2 Fine black wood
3 Mad Hatter guest
4 Former Tonight Show host
5 Tack on
6 Warms up, for short
7 Social equal
8 Printed error
9 Give or take
10 Pick-me-up
11 Rooms that may be "finished"
12 Even once
13 "Absolutely!"
21 Gold rush participants
22 Informal eatery
26 Soufflé ingredient
27 Dilate
28 Neglect to mention
30 Glasgow native
31 British Conservative
32 Junk email
33 Lobby for
34 Planetary spins
35 Word of solemn approval
36 Didn't grant
39 Justice Samuel
40 Leopard or lynx
45 Abutting
47 Shoe leathers
49 Watch secretly
50 Sports page figures



51 Emporium
52 Brother of Moses
53 Current fashion
54 Pickle variety
55 Nation on the Caspian Sea
56 Second to __ (superior)
57 Barbecue rod
58 Mexican Mrs.

A WEBCOMIC OF ROMANCE, SARCASM, MATH, AND LANGUAGE
by Randall Munroe

[2065] Who Sends the First Text?



I sort of wish my texting app showed the percentage next to each person, but also sort of don't want to know.

FUNFUNFUNF

FUNFUNFUNF

Applications Open Now!

ATTENTION CLASS OF 2021!

WANT TO **NETWORK** WITH MIT ALUMNI?

JOIN THE **COMMUNITY CATALYST LEADERSHIP PROGRAM**

GET PAIRED WITH AN MIT ALUMNUS/A

RECEIVE ON-GOING MENTORSHIP THROUGHOUT COLLEGE & BEYOND

ATTEND EXCLUSIVE LEADERSHIP WORKSHOPS & EVENTS

MIT ALUMNI

MIT student activities office
Community. Diversity. Leadership.

COMMUNITY CATALYST LEADERSHIP PROGRAM

For more information, contact Joseph Granado at jgranado@mit.edu

Application Link:
https://engage.mit.edu/submitter/form/start/228964
APPLICATIONS DUE NOVEMBER 9TH

APPLY NOW!

MIT LEADERSHAPE 2019

A premier MIT leadership program for undergraduate & graduate students

Why should you apply?

Interact with renowned MIT faculty and administrators
Connect with students in different class years from first-year undergraduates to 5th year PhD candidates
Discern your unique leadership style
Reflect on the impact you can make as a leader
Participate in powerful simulations, activities & discussions

Link to apply! https://leadershape.org/applications/apply/3751
Deadline is January 2nd, 2019

QUESTIONS?
email Joseph Granado at jgranado@mit.edu

institute by leadershape

VOTE, MIT!

Voter's Checklist

- ☐ Check your voter registration at vote.org
- ☐ Learn more about Massachusetts ballots at vote2018.mit.edu/ballot
- ☐ Vote! (choose one of three)
  - ☐ Go to a polling place between 7 am and 8 pm **Tuesday, November 6th**
  - ☐ Cast an early ballot in person* by **Friday, November 2nd** or by mail before 12 pm that day
  - ☐ Request an absentee ballot at turbovote.mit.edu. If you need stamps to mail a ballot, email stampsquad@mit.edu

*Find an early polling location at vote2018.mit.edu/early

Election Day Extravaganza

11/6 starting at 10 am
Kresge Lawn + Stud Plaza

It's Election Day! Come by the Student Center steps and Kresge for food, games, voting help, and general election hype. The MITvote team (and mascot) will feed you and cheer you on to the polls.

COMIT Election Debrief

11/7 from 7 pm-8:30 pm
2-143

Let's talk about the election. What was exciting? What frustrated you? Were you able to vote, and how do you think elections impact the MIT campus? Talk with your peers in small groups over dinner, and have a space to both express your experiences and learn about different student perspectives. This is an event for, and respectful of, all members of the MIT community.

THE MOST IMPORTANT VOTE IS YOURS